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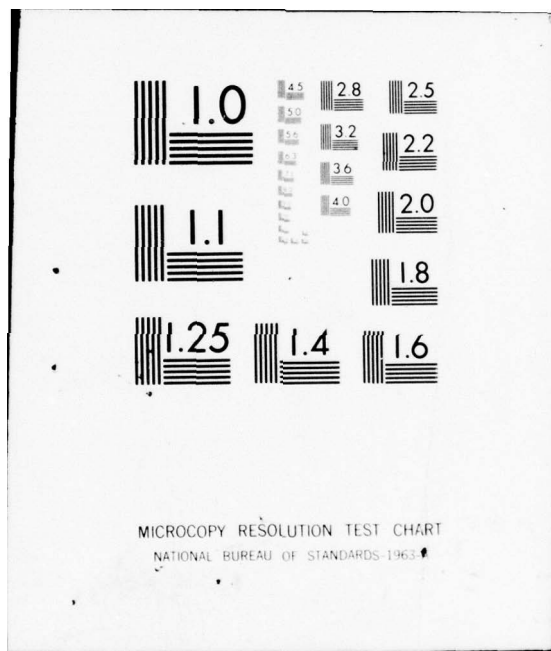
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THE DEVELOPMENT OF A SKILL QUALIFICATION TEST MANUAL
AND THE CONDUCT OF TEST DEVELOPMENT WORKSHOPS FOR
THE U.S. ARMY'S ENLISTED PERSONNEL MANAGEMENT SYSTEM

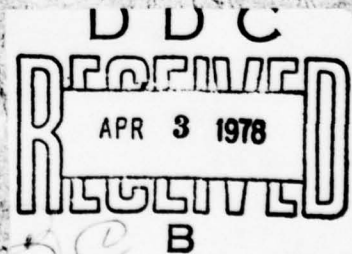
by

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Chester I. Christie, H. Alton Boyd,
and Pamela Mays

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Alexandria, Virginia 22314

March 1976

Final Report



Prepared for:

U.S. Army Research Institute for the
Behavioral and Social Sciences
1300 Wilson Boulevard
Arlington, Virginia 22209

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This report discusses the development of a skill qualification test manual for use in the U.S. Army's Enlisted Personnel Management System (EPMS). This manual, which was developed by utilizing the existing experience and information on performance tests, was used as the basic reference document in a series of test development workshops. The workshops were conducted for both supervisors and test developers from 28 different Army agencies. During the workshops,		

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the theory of hands on performance tests was presented which was followed by extensive practice in developing prototype performance tests. The result of this effort was that personnel attending the workshops returned to their own agencies with the basic knowledges and skills required for the development of performance tests during the EPMS program.

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PREFACE

This work describes work accomplished by the Human Resources Research Organization (HumRRO) in support of the U.S. Army's Enlisted Personnel Management System. The work was accomplished under contract with the U.S. Army Research Institute for the Behavioral and Social Sciences (Contract DAHC-19-75-C-0016). Dr. Milton H. Maier served as the Contracting Officer's Technical Representative. Both he and Dr. Douglas Young of ARI supplied the project with significant guidance and made substantial contributions to the research. Their help and guidance are gratefully acknowledged.

The work consisted of two principal tasks. The first, development of a Qualification Test Manual, was conducted at the HumRRO Western Division, Carmel, California. Dr. Howard H. McFann is the Division Director. Dr. Robert Vineberg and Dr. Elaine N. Taylor were responsible for development of the manual.

The second task was devoted to developing and conducting a series of workshops concerned with preparation of Skill Qualification Tests. These workshops were developed at the HumRRO Central Division, Columbus, Georgia, Office, and conducted at Fort Benning, Georgia. Dr. Wallace W. Prophet is the Division Director. Dr. Joseph A. Olmstead is Director of the Columbus Office. Mr. Theodore R. Powers was Project Director for the overall contract. Mr. Michael R. McCluskey, Mr. Chester I. Christie, Mr. H. Alton Boyd, and Dr. Pamela V. Mays were staff members for development and served as group leaders during the workshops.

Military support was provided through the Army Research Institute's Field Unit at Fort Benning, Georgia. Mr. Harold Strasel is Chief of the Field Unit. Military support was arranged by LTC Robert G. Matheson and CPT Raymond S. Costner. SFC Cornel Smith and SP4 Suzanna Raker assisted in conduct of the workshops.

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INTRODUCTION

The purpose of the project reported here was to provide materials and guidance which addressed the Army's immediate needs in test development for the Enlisted Personnel Management System (EPMS). Specifically, the project had two objectives. The first was to develop a Skill Qualifications Test (SQT) Manual to be used by test writers and administrators. This manual was to be designed to provide guidance for decision making during the test construction process, to include procedures for reaching decisions about options in sampling and simulating performance. The manual was developed and has been previously published. For this reason, it will be only briefly discussed in this report.

Of major concern for this report is the second objective of the project. This objective was to conduct a series of workshops on the design and use of SQT's for the EPMS program. During these workshops, the SQT Manual was used as the basic guidance document. Personnel from 28 different Army test-developing agencies attended the workshops. During the workshops, these personnel received instruction on the development of SQT's and later practiced the development of prototype tests for their agencies' specific career fields.

Although HumRRO acted as the contractor for the project, and was responsible for conducting all workshops, two other agencies were directly involved. The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is responsible for supplying scientific guidance to the Army in the implementation of the EPMS program. Specifically, ARI is responsible for developing the SQT validation plan for the EPMS program. During the workshops, ARI personnel gave several presentations and made substantial documentary input related to the latest thinking on SQT validation policies and plans.

The Training Management Institute (TMI) of the Army's Training and Doctrine Command (TRADOC) is the supervisory Army agency for EPMS implementation. At each workshop, TMI representatives made day-long

presentations on the latest EPMS policies. During the course of these presentations, attendees were encouraged to ask any questions their agencies had regarding policy matters.

MILITARY PROBLEM

Historically, the Army has demonstrated a continuous concern with efforts to upgrade the personnel programs for its officers and enlisted men. In recent years, these efforts have increased in scope.

For example, groups of functionally related Military Occupational Specialties (MOS) have been grouped into Career Management Fields. This grouping enables soldiers to accurately project a career plan spanning 20 to 30 years. Also, soldiers who have established a record of sub-standard performance are denied the opportunity to reenlist. This implementation of a Quality Management Program, together with controlled attrition, can keep the Army grade structure from becoming unbalanced. These, along with a number of other independent programs, gave more structure to manpower planning in the Army than had been the case in the past. However, the Army still lacked an overall career management system.

The first step in this direction came with the implementation of the Officer Personnel Management System. This system, now in operation, introduced a massive redesign of officer career patterns but did not provide enlisted personnel with such definitive direction.

To address this shortcoming, the Director of Military Personnel Management, Headquarters, Department of the Army, met with representatives of the U.S. Army Military Personnel Center (MILPERCEN) in January 1973. As a result of this meeting, an "EPMS Task Force" was established to find a feasible approach to designing a career system which would satisfy the career needs of noncommissioned officers and provide the appropriate number of men in each grade and skill level to carry out the Army's mission. During the next several years, many decisions were made and a system was formulated that is currently known as the Enlisted Personnel Management System (EPMS).

EPMS is designed to accomplish two general purposes. The first concerns Army manpower requirements, while the second involves the need for career progression of individual soldiers. An integral part of EPMS is the development of a system that features (a) systematic progression within career fields, (b) training and education as a career-long process for all enlisted personnel, (c) a comprehensive testing program that will assess the competence of persons at all skill levels, and (d) a formal structure for integration of evaluation, training, promotion, and classification to facilitate career progression and efficient management. The implementation of EPMS is currently underway.

RESEARCH PROBLEM

While there was a clear need for the development of a complete EPMS, certain aspects were recently recognized as having immediate priority. The most significant of these needs is the development of an appropriate testing program. Such a program has direct implications for design of the remaining components of the overall system. The testing program will affect the development of a workable system in the following ways:

- (1) By providing detailed performance objectives for formal training and for use in manuals that will aid soldiers in identifying the competencies they must possess for MOS qualification at particular skill levels.
- (2) By identifying the operational and logistical requirements (including the proper simulation of job conditions) that will be necessary to conduct valid evaluations.
- (3) By determining the characteristics of test information necessary to (a) validate competence for present skill level, (b) to determine qualification for the next higher skill level, and (c) support a variety of other personnel and managerial requirements.

In response to the need for a testing program within the EPMS system, HumRRO proposed that it would (1) develop an SQT Manual that could be used as a basic guidance document for test developers, and (2) conduct a series of workshops for personnel who will be involved in the development of tests for the SQT program.

APPROACH

DEVELOPMENT OF SQT MANUAL

The SQT Manual¹ was developed to meet one of the Army's immediate needs, i.e., a manual that can be used by personnel involved in the EPMS program as a basic reference and guidance document. The manual also had an important secondary role. It was to be used as the principal training document for all EPMS workshops.

The steps followed in developing the manual involved (1) conducting a survey of existing technology of test construction, (2) codifying and integrating this information with the extensive test development knowledge possessed by the HumRRO staff, (3) obtaining detailed guidance as to official EPMS policies and validation procedures from ARI and TMI, and (4) writing a manual which integrated information from all of the above sources.

The first draft of the manual was completed in June 1975. This draft was used during the workshops as the basic guidance document. Workshop attendees were asked to submit comments concerning the draft and the initial draft was revised to reflect both workshop comments and official changes in EPMS policies that had occurred since June.

DEVELOPMENT OF WORKSHOPS

Following publication of the SQT Manual, specific plans were made for the development of workshops. An analysis of the organizational structures of the agencies producing tests indicated that two separate types of workshops should be conducted. The first of these workshops would be for managers or high-level supervisory personnel. The general

¹Vineberg, Robert and Taylor, Elaine N. *Performance Test Development for Skill Qualification Testing: A Manual*. HumRRO Final Report FR-WD-CALIF-75-5, November 1975.

purpose of this workshop would be to present information and procedures that would enable supervisory personnel to control the quality of the materials produced by test developers. The second type of workshop would be for test developers, although some second level supervisory personnel would also be included. The purpose of these workshops would be to present information, procedures, and practical exercises on the development of prototype SQT's.

Based on an analysis of the needs of the EPMS program and guidance supplied to HumRRO by both ARI and TMI, the following specific objectives were developed for the workshops.

The Managers' Workshop objectives were:

- (1) To provide attendees with the latest official information and policies concerning the EPMS program.
- (2) To provide attendees with detailed information on criteria for acceptable SQT's.
- (3) To provide attendees with detailed information on the validation of SQT's.
- (4) To provide attendees with an opportunity to discuss EPMS policies in relation to the implementation capabilities of their agencies.

The Test Developers' Workshop objectives were:

- (1) To provide attendees with the latest official information and policies concerning the EPMS program.
- (2) To provide attendees with a detailed set of procedures for SQT development to include test objectives, determining task criticality, sampling, and test design.
- (3) To provide attendees information and guidance concerning the development of a SQT validation plan.
- (4) To provide attendees practice in developing prototype SQT's to include identifying scoreable units, determining whether measures should be performance or performance based, and identifying specific logistical and administrative test requirements.
- (5) To provide attendees opportunities to view hands-on and performance-based tests both on videotape and in real world situations.

(6) To provide attendees with an opportunity to discuss EPMS policies in relation to the problems of their own agencies.

Each workshop was then designed to maximize achievement of its objectives through selection of appropriate content and workshop methods.

An analysis of the number of personnel involved in the EPMS program indicated that a single Managers' Workshop should be conducted, followed by three successive administrations of the Test Developers' Workshop. The specific agencies and personnel to be invited were determined by TMI. Appendix A shows a list of agencies represented among personnel attending the workshops, workshop dates, and number of personnel attending from each agency.

The guiding premise for both workshops was that a maximum amount of active participation by attendees was desirable. To achieve this goal, the workshops were designed to heavily employ small-group discussion methods.¹

Workshops were presented in a 50-man classroom at The Infantry School. This was a standard classroom equipped with closed-circuit television, front and rear projection screens, blackboards, ultraviolet lights, overhead projectors, and moveable tables and chairs.

¹Olmstead, Joseph A. *Small-Group Instruction: Theory and Practice*. Human Resources Research Organization, 1974.

RESULTS

SQT MANUAL

An outline of the November 1975 edition of the SQT Manual appears in Appendix B. The manual consists of seven chapters and two appendices. Chapter 1 is an introductory chapter that presents an overview of the document and definition and discussions of the terms used.

Chapter 2 discusses the methods used in selecting a sample of tasks to include in an SQT. Chapter 3 examines the adequacy of any task analysis that is required to be conducted. Chapter 4 discusses the selection of a design for a performance test.¹ Chapter 5 deals with the critical issues of constructing either a full or partial performance test for a task. Chapter 6 discusses the design of a performance-based test² for a task. Chapter 7 describes the critical factors involved in administering an SQT.

A number of useful checklists are provided in the two appendices of the manual. These checklists are to be used for maintaining quality control during the development and validation of SQT's.

The November edition of the SQT Manual will be revised by ARI and distributed by TMI to all agencies tasked with implementation of the EPMS program.

THE MANAGERS' WORKSHOP

The Managers' Workshop was designed to be primarily an information-disseminating activity. An agenda appears in Appendix C. The workshop opened with an official policy briefing by representatives of TMI. During and following this presentation, there was extensive audience participation

¹The term "performance test" refers to a "hands-on" testing situation, most often conducted in a field environment.

²The term "performance-based test" refers to a simulation of a performance test. Typically, a performance-based test focuses on a written component.

concerning implementation of the EPMS program, with attendees discussing problems of their agencies in relation to the development of SQT's. This presentation was followed by several briefings given by HumRRO personnel. These briefings were designed to illustrate some of the current problems with both performance and performance-based tests, and included a detailed report on the results of a performance test recently conducted by HumRRO.

During the next segment of the workshop, participants were divided into four small discussion groups, each composed of seven attendees. HumRRO personnel served as discussion leaders for these groups. The role of the discussion leader was to guide the discussion into appropriate areas and to act as an information resource in explaining the SQT Manual. Small group discussions continued for two days, and, during this time, ARI representatives made several presentations on SQT validation. On the final day of the Managers' Workshop, the attendees were reassembled into a single audience. A discussion panel was formed consisting of one representative from each small group. All panel members were attendees and no representatives of HumRRO, ARI, or TMI were included. The panel discussed the current state of the EPMS program and identified problems which, in their views, remained to be solved in implementation of the program. The Managers' Workshop concluded with a summary of the week's activities prepared by HumRRO personnel.

THE TEST DEVELOPERS' WORKSHOP

For the Test Developers' Workshop, it was felt desirable to collect some minimal amount of background data on the attendees. It was found that most test developers occupy levels GS-9 to GS-11 in Civil Service, or E6-E9 and O1-O3 in the Army. Attendees possessed an average of 3.7 years of experience in preparing performance-based tests (range 0 - 16 years) and 1.5 years of experience in preparing performance tests (range 0 - 13 years). It was found that 30 percent of all attendees did not have any experience in test development. This figure was somewhat higher

than expected and led the workshop staff to emphasize basic information more than would have been the case for more experienced participants.

The expected attendance at the workshops by representatives from many different agencies was also a factor considered in program design. The problem was reduced by inviting representatives of no more than eight agencies to each workshop. Nevertheless, differences among agencies in the duties assigned to test developers remained quite apparent. Table 1 shows the different functions performed by attendees in connection with the EPMS program. The data also reflect considerable differences in ways agencies employ personnel in the program.

Table 1
Percent of Workshop Attendees Involved in the
Activities of the EPMS Testing Program

EPMS Activity	Percent Involved
Preparing items for knowledge tests	53
Preparing items for hands-on performance tests	48
Selecting technical content of items	62
Selecting format of items (e.g., multiple choice)	57
Preparing administrative instructions for tests	62
Making decisions as to whether items will be commander certified, included in a knowledge test, or included in a performance test	38
Designing agency field validation procedures	43
Analyzing data after completion of field validation procedures	48
Revising items after initial field validation	67

The major observation from this table is that no more than two-thirds of all attendees were involved in any single EPMS implementation activity. This generally heterogeneous interest by attendees required that the workshops cover a wider range of topics than would normally be the case.

All Test Developers' Workshops had the same general format,¹ but there were minor differences in scheduling among the three administrations.

The Test Developers' Workshops opened with a brief general orientation on their purpose. Following this introduction, attendees were assigned the task of designing a prototype SQT that would be capable of assessing the performance of a person making a left turn in a motor vehicle.² The results of this task, completed before any instruction was initiated, served as baseline data concerning the attendees' pre-workshop ability to write performance tests. It was found that most attendees developed a left-turn test that was inadequate in many respects. An example of the tests which attendees produced is shown in Appendix E.

Selected examples of the left-turn test were then analyzed by workshop staff members before the general audience. This procedure provided attendees an initial familiarization with criteria for evaluating the acceptability of a particular SQT. This session was followed by a series of HumRRO-developed briefings concerning current problems with both performance and performance-based tests. The detailed results of a recent HumRRO-conducted field test were also presented on videotape.

On the second day of the Test Developers' Workshops, representatives from TMI conducted a day-long presentation on the latest EPMS implementation policies. This presentation usually stimulated many questions and a lively discussion among workshop participants.

On the third day of the workshops, attendees were divided into four small groups. The remainder of the first week was spent in discussion of factors involved in the development and validation of SQT's. The primary reference document was the previously-developed SQT Manual,

¹A detailed agenda for the Test Developers' Workshops appears as Appendix D.

²Due to the heterogeneous backgrounds of the attendees, a non-branch specific test was assigned.

although two other publications were also reviewed.^{1,2} Each small-group discussion leader "worked-through" the SQT Manual with his group so that a common understanding could be established for SQT development. Workshop attendees were encouraged to present the views of their individual agencies and many attendees brought up for discussion and critique specific types of materials that had been previously developed by their agency (e.g., Job-Task Data Cards, Draft SQT's, Draft Soldiers Manuals, etc.). By the end of the first week, most attendees had acquired an adequate conceptual background in SQT development.

Starting with the second week, attendees were asked to individually develop several prototype SQT's. Participants worked at their own pace and in the specific MOS's and career fields for which they were responsible in their jobs. HumRRO personnel supplied advice and guidance during this development process.

During this week, a field trip was conducted. This trip was to a field site where performance and performance-based tests were being conducted by various committees of The Infantry School. Workshop attendees were encouraged to make systematic observations of these tests to identify both strengths and limitations of the testing procedures. Upon return from the field test, each discussion group held a critique on the testing procedures they had viewed.

Near the end of the second week, each small group discussed the prototype SQT's that had been individually developed and selected one of them for presentation to the entire audience. The presentation panel, composed entirely of workshop participants, then discussed the selected SQT's with the attendees as a whole. Prototype SQT's were extensively

¹Taylor, Elaine N. and Vineberg, Robert. *Annex to Performance Test Development for Skill Qualification Testing*. HumRRO Research Product RP-WD-CA-75-16, July 1975.

²Swezey, Robert W. and Pearlsteing, Richard B. *Guidebook for Developing Criterion-Referenced Tests*. Arlington, Virginia: U.S. Army Research Institute (Applied Science Associates, Inc.), August 1975.

revised during this time period. An example of a revised SQT is shown in Appendix F. This day-long presentation generated much interaction among all the attendees. This segment of the workshop demonstrated that the participants had developed the expertise required to effectively examine the acceptability of actual SQT's.

At the end of each workshop, a short summary of activities was presented by HumRRO personnel. Workshop attendees were advised that HumRRO would be available for informal consultation from the end of the workshops until 15 December 1975. Approximately 10 agencies subsequently initiated informal discussions with HumRRO on some aspect of EPMS implementation.

DISCUSSION

This project has been successfully completed by (1) development of an SQT Manual, and (2) conduct of a series of workshops for personnel who are presently involved in implementation of the EPMS program. In accomplishing this work, several areas were identified by project personnel that are worthy of discussion here.

First, the development of a guidance manual for use as basic training material in the workshops proved to be an effective approach. The manual is providing agency planners, supervisors, and test developers with an informational tool that will help to make the output of SQT-developing agencies more homogeneous.

However, the durability of the SQT Manual has yet to be determined. Although much of the manual is based on enduring test development concepts, these are interpreted in the manual according to the official EPMS policy guidance that existed at the time of preparation. Since the EPMS program is in the initial stages of a long-range implementation, it is reasonable to assume that some policies will eventually change and, accordingly, new testing guidance will be required.

Second, it was found that the initial attitude expressed by most workshop participants was that of skepticism. The majority of attendees had major reservations about (1) the wisdom of implementing the EPMS program, (2) the adequacy of the time period and resources available to their agencies for accomplishment of their EPMS work, and (3) the eventual durability of SQT's when used on a worldwide basis. It would be misleading to say that attendance at the workshops caused a complete reversal in attitude for all attendees. However, certain workshop activities did lead to important attitude shifts. For example, the detailed presentations made by TMI tended to greatly diminish the voiced objections to current policy. In another area, the exposure to theoretical knowledge about performance testing and the extensive practice in writing draft SQT's helped most participants to gain confidence that they could develop procedures for

maximizing testing quality in the future, given the practical constraints that exist in field situations. Finally, the informal interactions among participants did much to dilute initial negativism, since many individuals discovered that they shared similar problems and were not in unique situations.

Finally, the general validity of the workshops was demonstrated. By the end of the workshops, almost all personnel were able to develop prototype SQT's that would be of benefit to their agencies. The expertise that was developed resulted from thorough discussion of the theoretical concepts involved in performance testing and subsequent practice in writing draft tests. The use of the small group discussion technique insured that each person received individualized supervision by group leaders. This proved particularly valuable to that one-third of the participants who had no previous experience in the development of performance tests. The heterogeneous background of attendees (approximately 50% civilian and 50% military) was also of benefit because military content experts were able to interact with civilian test developers and, thus, form teams that included the widest possible range of abilities. It is concluded that the EPMS program now has a reservoir of personnel who are able to develop the SQT's which will form the foundation of the assessment system.

APPENDICES

Appendix A

SQT WORKSHOP BY ORGANIZATION, NUMBER ATTENDING, AND DATE OF ATTENDANCE

Organization	Mgr's	Worker's		
	25-29 Aug	2-12 Sep	22 Sep- 3 Oct	14-24 Oct
EEC - Enlisted Evaluation Center	2	2	8	9
USAADS - US Army Air Defense School	2	3		
USAARMS - US Army Armor School	2	2		1
USAES - US Army Engineer School	1	6		
USAFAS - US Army Field Artillery School	2	3		
USAIS - US Army Infantry School	2	2		
USA Intel Ctr and Sch - US Army Intelligence Center and School	1	3		
USASA - US Army Security Agency	1	1		
USAFESA - US Army Field Electrical Security Agency		1		
USASMA - US Army Sergeant Major Academy	1		1	
USASIGS - US Army Signal Schools	1		3	
DINFOS - Defense Information School	1		1	
USACES - US Army Communications-Electronics School	1		4	
USAIA - US Army Institute of Administration	1		4	
USA Sch of Music - US Army School of Music	1		1	
USAMPS - US Army Military Police School	1		2	
Def Comm Ops Unit - Defense Communications Operations Unit			1	
Academy of Health Sciences (Ft. Sam Houston)	1		1	
WRGH - Walter Reed General Hospital			1	
WRAIR - Walter Reed Army Institute of Research			1	
USAMEOS - Medical Equipment and Optical Service	1		1	
USAMMCS - US Army Missile and Munitions Center School	1			3
USAOCS - US Army Ordnance Center and School	1			4
USATSCH - US Army Transportation School	1			4
USAAVNCS - US Army Aviation Center School	1			1
USACHCS - US Army Chaplains Center School	1			1
USAQMS - US Army Quartermaster School	1			3
USALOGS - US Army Logistics School				1

Appendix B

OUTLINE OF SQT MANUAL (NOVEMBER EDITION)

CHAPTER ONE - INTRODUCTION

- I. Overview
- II. Discussion of Terms Used in Manual
- III. Organization

CHAPTER TWO - SAMPLING OF TASKS TO MAKE UP A SKILL QUALIFICATION TEST

- I. Army Requirements that Affect the Sampling Plan
- II. Task Characteristics that Affect The Sampling Plan
 - A. Skilled and Non-Skilled Behaviors and Their Relation to Performance Oriented Testing and Knowledge Oriented Testing
 - B. Functional Areas of Job Performance
- III. Example of a Sampling Plan

CHAPTER THREE - EXAMINING THE ADEQUACY OF THE TASK ANALYSIS

- I. Boundaries
- II. Conditions
- III. Behaviors
- IV. Standards
 - A. Process vs Product Scoring
 - 1. Tasks in Which There Is No Product, There is Only Behavior (Process)
 - 2. Tasks in Which the Product is Determined Solely by the Behavior of the Performer and These Behaviors Have Been Identified and Are Observable
 - 3. Tasks in Which the Product is Determined by the Behaviors of the Performer, BUT These Behaviors Have Not Been Identified or Are Not Observable
 - 4. Tasks in Which the Product is NOT Determined Solely by the Behaviors of the Performer
 - B. Clear and Reasonable Standards
 - 1. Unambiguous Standards
 - 2. Reasonable Standards

CHAPTER FOUR - SELECTING A TEST DESIGN FOR A PERFORMANCE ORIENTED TEST

- I. Full Performance Test
- II. Partial Performance Tests
 - A. Ways to Simulate
 - 1. By Omitting Non-Skilled Task Behaviors
 - 2. By Modifying Cues and Behaviors
 - B. Evaluating Simulations

- III. Examples of Full and Partial Performance Tests
- IV. Guidelines for Selecting a Test Design
- V. Reviewing the Selected Performance Oriented Test Designs that are to be Assembled in the Hands-On Component of an SQT

CHAPTER FIVE - CONSTRUCTING THE FULL OR PARTIAL PERFORMANCE TEST FOR A TASK

- I. Contributions of Task Data Card and Test Design Information to the Test Construction Process
- II. Feasibility Trials
- III. Pilot Testing
 - A. Considerations About Reliability and Validity
 - 1. Reliability
 - a. Test/Retest Reliability
 - b. Scorer Reliability
 - 2. Validity
 - a. Content Validity
 - b. Concurrent Validity
 - c. Face Validity
 - B. Develop Plan for Pilot Test
 - 1. Planning
 - 2. Identifying Examinees
 - 3. Procure All Equipment and Other Resources and Select and Train Test Administrators
 - 4. Assignment of Scorers for Scorer Reliability Study
 - 5. Devise Instruments for Random Observations on Questions of Standardization
 - 6. Conduct Pilot Test
- IV. Data Analysis
 - A. Test/Retest Reliability
 - B. Scorer Reliability
 - 1. Data Obtained when Four or More Scorers Can Observe Performance or Product of Same Examinee
 - 2. Data Obtained when Observation of an Examinee's Performance is Limited to Two Scorers
 - C. Concurrent Validity
 - D. Face Validity
 - E. Observations on Standardization of Procedures

CHAPTER SIX - DESIGNING A KNOWLEDGE ORIENTED TEST FOR A TASK

- I. Characteristics of a Knowledge Oriented Test
- II. Steps to be Followed
 - A. First Example - Brake Adjustment
 - B. Second Example - Constructing a Recoilless Rifle Position
- III. A Few Words About Writing a Multiple Choice Item
- IV. Informal Trials

CHAPTER SEVEN - ADMINISTERING A SKILL QUALIFICATION TEST

- I. Characteristics and Responsibilities of Test Manager
- II. Organization of Task Tests
- III. Characteristics of Test Site, Equipment, and Materials
- IV. Training Test Administrators - Not Applicable to the TCO
- V. Development of Contingency Plans
- VI. Orientation for Examinees
- VII. Scheduling Examinees

APPENDIX A Checklist for Constructing SQTS

APPENDIX B Observations to be Made During Feasibility Trials and Pilot Testing of a Performance Oriented Test

Appendix C.

MANAGERS WORKSHOP ON THE DEVELOPMENT OF CRITERION BASED PERFORMANCE TESTS

MONDAY AM - Starting Time 0830, Building 4, Room 61 *(Same all week other than Thursday AM)*

Opening Remarks	HumRRO
Orientation	Army Research Institute (ARI)
Administrative Remarks	ARI
USAIS Welcome and Briefing	U.S. Army Infantry School <i>(Briefing in Room 642)</i>
EPMS Update and Presentation of Latest SQT Policies	Training Management Institute (TMI) <i>(Return to Room 61)</i>

MONDAY PM - Starting Time 1315, Building 4, Room 61 *(Same all week)*

EPMS Update (Continued)	TMI
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TUESDAY AM

"Some Problems of Paper-and-Pencil Tests"	HumRRO
"Some Current Problems with Performance Tests"	HumRRO
"Field Test of Prototype Criterion Based Performance Tests"	HumRRO
Distribution of SQT Manual	HumRRO
"Definition of SQT Terms"	HumRRO

TUESDAY PM

(All Managers of Item Writing Agencies will be formed into Small Discussion Groups; Other Personnel may observe as desired)

Discussion of Chapter 1 - Overview

Discussion of Chapter 2 - Sampling of Tasks to Make Up A Skill Qualification Test

Discussion of Chapter 3 - Developing a Full or Partial Performance Test

WEDNESDAY AM

Discussion of Chapter 4 - Constructing the Full Performance Test or
the Partial Performance Test for a Task

Discussion of Chapter 5 - Issues in the Development of Test Scores

Discussion of Chapter 6 - Administering a SQT

WEDNESDAY PM

Presentation and Discussion of Agency Problems by Agency Personnel

Discussion of SQT

ARI

Validation Plan

THURSDAY AM

Field Trip

0800 - Small Groups 1 and 2 will report for Field Trip as directed

1000 - Small Groups 3 and 4 will report for Field Trip as directed

THURSDAY PM

Discussion of Field Trip

Preparation of Small Group Reports and Identification of Panel
Participants

FRIDAY AM

(Entire Group reforms as Single Unit)

Panel Discussion on "Management Problems in Designing and Implementing
Criterion Based Performance Tests"

FRIDAY PM

General Review of the
Conference

HumRRO

Appendix D

WORKSHOP ON THE DEVELOPMENT OF CRITERION BASED PERFORMANCE TESTS FOR TEST DEVELOPERS

MONDAY AM - Starting Time 0830, Building 4, Room 61 *(Same all week unless
(Break approximately 1145) otherwise advised)*

Opening Remarks	HumRRO
Welcome	U.S. Army Infantry School
Orientation	Army Research Institute (ARI)
EPMS Update	Training Management Institute (TMI)

MONDAY PM - Starting Time 1315, Building 4, Room 61 *(Same all week unless
(Break approximately 1600) otherwise advised)*

EPMS Update (Continued)	TMI
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TUESDAY AM

"Some Problems of Paper-and-Pencil Tests"	HumRRO
"Some Problems with Hands-On Performance Tests"	HumRRO
"Results of a Prototype Field Test"	HumRRO
<i>(Pass out SQT Manual)</i>	
Introduction to SQT Manual and Discussion of Terms	HumRRO

TUESDAY PM

(All personnel will be formed into small groups)

Review of Briefings, Assessment of Agency Materials (e.g., Job/Task Data Cards), and General Discussion of Agency Problems

WEDNESDAY AM

Initiate Discussion on HumRRO SQT Manual

WEDNESDAY PM

Continue Discussion on SQT Manual

THURSDAY AM

Continue Discussion on SQT Manual

THURSDAY PM

Complete Discussions on SQT Manual

(Pass out HumRRO Performance Test Critique Book)

FRIDAY AM

Review Critique Book and Discuss Categories of SQT Evaluation Criteria

FRIDAY PM

Discussion on Specific Factors that Constitute an Acceptable SQT Test

MONDAY AM - SECOND WEEK

Guidance on Development of SQT's and Initiation of Prototype Test Development

MONDAY PM

Develop Prototype SQT's.

TUESDAY AM

Develop and Discuss Prototype SQT's.

TUESDAY PM

Continuation - Discussion of Prototype SQT's

WEDNESDAY AM

Group Summarizes Small Group Discussions and Selects a Prototype Test for Presentation to Entire Workshop

WEDNESDAY PM

Field Trip *(Small Group Leaders will provide information as to time, etc.)*

THURSDAY AM

(Entire Group reforms)

Representatives of Small Groups Give Reports to Include Presentation
of Selected Prototype SQT's - SQT's are Critiqued by Group

THURSDAY PM

Continuation of Thursday AM

FRIDAY AM

Panel Discussion on SQT Testing with One Representative from Each
Small Group

FRIDAY PM

Depart for Home Station

Appendix E

INITIAL PERFORMANCE TEST DEVELOPED BY A WORKSHOP ATTENDEE

TASK: Assess a legal left turn.

TEST EQUIPMENT: Examinee is driving a vehicle down a street. Examinee is seated in the front seat of the vehicle to the left of the examiner.

INSTRUCTION: Examinee will be instructed to make a left turn at the next intersection.

SCOREABLE UNITS:

- | | | | |
|---|-----|----------|----|
| 1. Was examinee careful when driving? | Yes | Doubtful | No |
| 2. Did examinee check for oncoming traffic? | Yes | Doubtful | No |
| 3. Did examinee check for pedestrians? | Yes | Doubtful | No |
| 4. Did examinee complete turn satisfactorily? | Yes | Doubtful | No |

VALIDATION PLAN: Try it out in the field. If it works, it's OK.

HumRRO Critique

This test is clearly inadequate in all respects. However, it represents a level of knowledge and specificity that was exhibited by approximately 30% of all personnel during their first workshop session.

The test equipment should be specifically identified. The test environment should be discussed to insure standardization. For procedural tasks of this type, a drawing would be helpful.

The instructions to the examinee are inadequate since the exact wording is not identified. Additionally, the examinee should be told about the general testing situation.

The scoreable units as written would be difficult to apply. There are no directly observable actions stated. The words "check" and "careful" are not defined and imply actions that would be difficult to directly observe. The word "satisfactory" is not defined and, thus, much variability would be found between examiners. Examples of good scoreable units for this task are such things as (1) Activates left turn signal, or (2) Enters left lane before making turn. In the SQT program, all units will be scored GO/NO GO. A doubtful category serves no useful purpose.

The validation plan can be commended for its intent but is, of course, completely inadequate. No standardization between agencies could be expected given such general guidance.

Appendix F

SKILL QUALIFICATION TEST ADMINISTRATOR INSTRUCTION SHEET MOS 72E SKILL LEVEL 2 PU-619

1. OBJECTIVE: To measure the examinee's ability to install Generator Set PU-619.
2. INSTRUCTIONS FOR TEST ADMINISTRATION: Test Administrators are responsible for setting up the test site and briefing each examinee.

A. Necessary Equipment:

- (1) Generator Set PU-619, 2 each (one as back-up).
- (2) Gas, 2 5-gallon cans.
- (3) Oil, 4 quarts.
- (4) Fire Extinguisher (CO²).
- (5) Ground Rod, 2 each.
- (6) Ground Rod Clamp, 2 each.
- (7) Ground Cable, 2 each.
- (8) Sledge Hammer, 1 each.
- (9) Pioneer Tools.
- (10) TM 5-6115-275-15.
- (11) Up-To-Date Log Book w/DA Form 2404.
- (12) Water, 5 gallons.
- (13) Performance Checklist for Each Examinee.
- (14) Pencil.

- B. Test Administrators: One (1) Test Administrator is required for each test site.

- C. Conditions: In a field environment during daylight hours.
(*Caution: Test will not be conducted during severe weather conditions for safety reasons.*)

D. Procedural Instructions:

- (1) The test site must be set up and testing procedure followed the same for each examinee.
- (2) If equipment malfunctions, spare equipment will be used and examinee will be retested.
- (3) Read verbatim the Instructions to Examinee contained in Paragraph 3.

- (4) Do not assist examinee except for safety reasons.
 - (5) Establish fire point.
 - (6) Generator will be set for single phase 220V.
3. INSTRUCTIONS TO EXAMINEE: This is an evaluation of your ability to install a Generator Set PU-619 as outlined in TM 5-6115-275-15, start generator and place in an operational mode for single phase 120V. To accomplish this task you will be provided with a Generator Set PU 619, all necessary equipment and material. TM 5-6115-275-15 is provided and may be used as necessary. To receive a passing grade you must install the generator and place in an operational mode within 35 minutes.
4. INSTRUCTIONS FOR EVALUATION SCORE SHEET: Observe the examinee for proper performance and evaluate the individual by checking "Go" or "No-Go." Each step performed correctly will be valued as indicated.

PERFORMANCE CHECKLIST

TASK: Install Generator Set PU-619

EXAMINEE:

DATE:

TEST ADMINISTRATOR:

TIME STARTED:

TIME STOPPED:

	<u>GO</u>	<u>NO-GO</u>	<u>VALUE</u>
A. Ground Generator.			
Drive ground rod.	_____	_____	<u>1</u>
Attach ground strap.	_____	_____	<u>1</u>
B. Set Switches.			
Voltage/phase switch to single phase 120V.	_____	_____	<u>1</u>
Circuit breaker off.	_____	_____	<u>1</u>
3-Way fuel valve set to primary position.	_____	_____	<u>1</u>
C. Perform Pre-Operational Check.			
Check oil level.	_____	_____	<u>1</u>
Check fuel level.	_____	_____	<u>1</u>
Check air cleaner.	_____	_____	<u>1</u>
Check date oil filter changed.	_____	_____	<u>1</u>
D. Start Generator.	_____	_____	<u>1</u>
E. Adjust Generator to Proper Operating Level.			
Breaker switch to "on."	_____	_____	<u>1</u>
Adjust voltage to 120V \pm 5V.	_____	_____	<u>1</u>
F. Complete task within 30 minutes.	_____	_____	<u>1</u>

TOTAL SCORE: GO NO-GO

NOTE: To receive a "Go" for the task, the examinee must complete both items under A, all three items under B, two of the four items under C, Item D, and both items under E. Examinee must receive a "Go" for Item F.